



November 18, 2019

Michael Hooper
Alaska Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709-3643

Re: 2019 Groundwater Sampling at the Carrs-Foodland Site in Fairbanks, Alaska, ADEC File 102.38.02.

Dear Mr. Hooper,

This letter report was prepared by SLR International Corporation (SLR) on behalf of the Bachner Company, Inc. (Bachner) to present the 2019 groundwater monitoring results at the Former Carrs-Foodland Site in Fairbanks, Alaska (Site).

Background

The Site is listed in the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Database under Hazard ID 1397 (File No. 102.38.02). The Site is reportedly impacted by historical release(s) from a former 500-gallon underground heating oil tank (former bakery underground storage tank [UST]) removed in 1991 (Shannon and Wilson 2002). The tank was located next to the Foodland Building, and is the current location of monitoring well MW-3. In a letter from ADEC to Bachner (ADEC, 2017b), ADEC requested that groundwater be sampled at the source area (MW-3) and at least one downgradient well on an annual basis until a stable and decreasing trend can be established for DRO concentrations, or until the results are less than the DRO groundwater cleanup level in Table C in subpart 345 of Chapter 75 of Title 18 of Alaska Administrative Code (18 AAC 75.345) (ADEC, 2018).

2019 Groundwater Sampling Activities

The work was performed in accordance with the ADEC approved Work Plan for the project (SLR, 2018), and was consistent with the ADEC field sampling guidance (ADEC, 2017a). Per the Work Plan, two wells were sampled:

- Monitoring well MW-3 on the north side of the Foodland Building where the bakery UST was formerly located; and,
- Monitoring well MW-34A, which is approximately 200 feet northwest and hydrologically downgradient of the MW-3 (Figure 1). MW-34A (formerly called TB124A) is the shallowest well in a downgradient well cluster. This well is known to be impacted by a chlorinated solvent plume from a former laundromat located upgradient from the Carrs-Foodland Site, referred to as the Gaffney Road East Coin King Site (ADEC Hazard ID 2573), (Ahtna, 2014).

An SLR scientist, Mr. Austin Johnston, who is a qualified environmental professional as defined by 18 AAC 75.333, collected the samples for laboratory analysis. The sampling was completed on September 19, 2019. A photograph log documenting the site conditions during the sampling event is included as Appendix A. Field notes, groundwater sampling forms, and instrument calibration documentation completed during the site work are presented as Appendix B of this report.

Groundwater samples were collected using low-flow sampling methodology. The low-flow sampling method requires purging the well at a low flow rate (between 0.05 and 0.5 liters per minute [L/min]), while maintaining a drawdown of less than 0.3 feet, if possible. During the purging, up to six water quality parameters are measured (temperature, pH, conductivity, oxidation-reduction potential [ORP], dissolved oxygen [DO], and turbidity) at three to five-minute intervals. Purging is considered complete once water drawdown and water quality parameters are considered stable. Water quality parameters are considered stable when three consecutive discrete readings of at least three parameters (or four if temperature is used) are within the following criteria:

- Temperature ($^{\circ}\text{C}$), plus minus (\pm) 3 percent (minimum of ± 0.2 $^{\circ}\text{C}$);
- pH, ± 0.1 standard units;
- Specific conductance, ± 3 percent;
- Oxidation-reduction potential, ± 10 millivolts;
- Dissolved oxygen, ± 10 percent; and
- Turbidity, ± 10 percent, or below 10 nephelometric turbidity units.

The MW-34 well identified for sampling in 2018 was sampled in 2019 to assure sampling the same well in this cluster. Purging and sampling was completed with a down-hole ProActive[®] Monsoon stainless-steel pump with an adjustable flow rate. The two monitoring wells maintained near constant water levels during purging at flow rates of around 0.4 L/min and attained stable parameters. The water quality parameters were measured using a YSI 556 multi-parameter instrument. Water quality parameters were measured at periodic intervals, allowing for at least one volume of the YSI flow-through cell to be fully replaced between readings. After stability was attained, samples for laboratory analysis were collected. Primary and duplicate samples were collected from MW-3, and a primary sample was collected from the downgradient well MW-34A. The purge water was containerized in a 10-gallon drum. After field activities were complete, the purge water was transported to NRC Alaska in Fairbanks for transportation to the designated disposal facility (Clean Harbors Aragonite LLC, Aragonite, Utah; USEPA ID Number UTD961552177).

Sample Handling and Laboratory Analysis

Upon collection, groundwater samples were labeled and placed into a chilled cooler with a trip blank. Samples were transported to the SGS North America (SGS) laboratory in Fairbanks

under chain of custody (COC) procedures. Groundwater samples were analyzed for the following:

- Diesel range organics (DRO) by Alaska Method AK102 (MW-3 and MW-34A);
- Volatile organic compounds (VOCs) by EPA Method 8260C (MW-3 and MW-34A); and,
- Polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D-SIM (MW-3 only).

Analytical data were reviewed for consistency with the ADEC Technical Memorandum, Environmental Laboratory Data and Quality Assurance Requirements (ADEC, 2009). Appendix C contains a Data Quality Assessment (DQA), ADEC Laboratory Data Review Checklist, and the laboratory analytical data package. Based on the DQA, the data were of good quality and acceptable for use with the noted qualifications. No data were rejected, and no issues were noted with regards to the data package, except as discussed below:

- Naphthalene was analyzed by Methods SW8260C and SW8270D. The SW8260C naphthalene results for parent sample MW-3 and field duplicate MW-4 were 99 microgram per liter ($\mu\text{g/L}$) and 109 $\mu\text{g/L}$. The SW8270D naphthalene results for these samples were 43.7 $\mu\text{g/L}$ and 36.4 $\mu\text{g/L}$, approximately 30% to 40% of the SW8260C reported values. For naphthalene by Method SW8270D, the associated surrogate for MW-4 recovered slightly below acceptable limits (refer to Surrogate Recovery section of this QAR for discussion) and LCSD RPD exceeded acceptable limits (see LCS and LCSD section for discussion). Due to these contributing factors, the SW8260C naphthalene results are considered to be more accurate representation of the true concentration.

Analytical Results

The 2019 analytical results are provided in Table 1. Table 2 provides a summary of current and previous analytical results for MW-3 for selected parameters of interest. The results were screened against the current ADEC groundwater cleanup levels (ADEC, 2018).

- In MW-3, groundwater cleanup levels were exceeded for DRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene as shown on Table 1. The 1,3,5-trimethylbenzene, ethylbenzene, and 2-methylnaphthalene detections were only slightly above their respective cleanup levels, while the other compounds exceeded the cleanup levels by more than a factor of three. The compounds exhibiting the greatest exceedance of the cleanup level were DRO and naphthalene, with detected concentrations of 18.5 mg/L and 109 $\mu\text{g/L}$ versus groundwater cleanup levels of 1.5 mg/L and 1.7 $\mu\text{g/L}$, respectively. Chlorinated VOCs, perchloroethylene (PCE) and related daughter products including trichloroethylene (TCE) and vinyl chloride, were below detection limits in the groundwater sample collected from MW-3.
- The only analyte detected above ADEC cleanup levels in the groundwater sample collected from MW-34A was TCE at a concentration of 16.2 $\mu\text{g/L}$. In 2018, TCE was

detected in the sample from MW-34A at a similar concentration of 11 µg/L. The analytes that exceeded groundwater cleanup levels in the sample from MW-3 (noted above) were non-detectable with the exception of DRO. The detected DRO concentration was significantly lower in the sample from MW-34A (0.424J mg/L) than MW-3 (18.5 mg/L), and well below the groundwater cleanup level (1.5 mg/L). The observed concentration of DRO in the groundwater sample from MW-34A was slightly lower than the concentration measured in the sample from this well in 2018 (0.435 mg/L).

Discussion

The 2019 sample results indicate that the petroleum hydrocarbon contamination attributed to the Former Carrs-Foodland UST site has not caused significant downgradient impacts as evidenced by the non-detectable or nearly non-detectable concentrations of fuel related analytes in the downgradient well MW-34A. This suggests the petroleum hydrocarbon plume which was likely present since at least 1991 (when the leaking UST was removed), is stable and not migrating. Concentrations of target analytes observed in the sample from MW-3 were generally similar to those observed in 2018, indicating a stable groundwater plume in the former UST source area.

The presence of the TCE in MW-34A is attributed to a Gaffney Road site and not associated with the Former Carrs-Foodland UST release. As noted, MW-3 had non-detectable chlorinated VOCs.

A comparison of the 2019 results in MW-3 with the cumulative historical results (Table 2) indicates contaminants of concern have been gradually decreasing over time, with occasional oscillations. This is particularly evident in the benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations which have the longest data set; however, the DRO concentrations show a similar pattern since 2012.

Conclusions

The 2019 groundwater monitoring at the Carrs-Foodland Site indicates that petroleum hydrocarbon concentrations in the groundwater at the former UST location exceed ADEC groundwater cleanup levels but have decreased over time. The petroleum impacted groundwater plume does not appear to have migrated appreciably since the UST (source) was removed in 1991 and is considered stable. This is evidenced by the sample results in the nearest downgradient well (MW-34A).

Sincerely,

SLR International Corporation



Carl Benson
Principal Scientist/Project Manager

Cc: John Bachner, Bachner Company, Inc.



References

Ahtna Engineering. 2014. SFY 2104 Gaffney East: Groundwater Monitoring and Limited Addition Characterization Report. October.

Alaska Department of Environmental Conservation (ADEC). 2009. Environmental Laboratory Data and Quality Assurance Requirements. Technical Memorandum. August.

ADEC. 2017a. Field Sampling Guidance. August.

ADEC. 2017b. Groundwater Monitoring-Former Carrs Foodland (file 102.38.027). Letter from Michael Hooper to J. Andrew Bachner. August 24.

ADEC. 2018. Oil and Other Hazardous Substances Pollution Control. October 27.

Shannon and Wilson (S&W). 2002. Level 1 Environmental Site Assessment, Carrs/Safeway Foodland, Fairbanks Alaska. November 18.

SLR International Corporation (SLR). 2018. Work Plan for Sampling Groundwater at the Carrs-Foodland Site in Fairbanks, AK. August 7.

Attachments

Figure 1 Site Map

Table 1 2019 Groundwater Monitoring Results

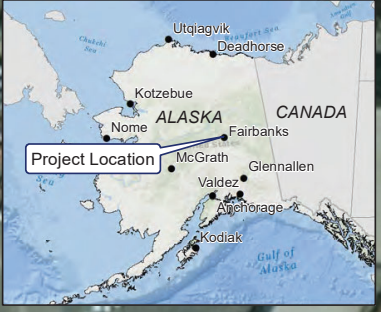
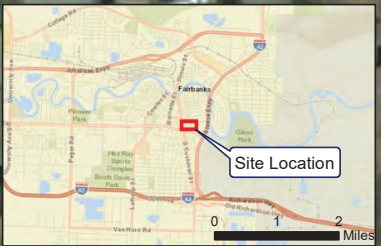
Table 2 Cumulative Groundwater Sample Results for Select Analytes of Interest in Monitoring Well MW-3



Appendices

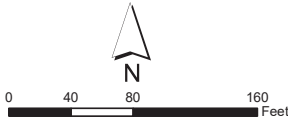
A Photograph Log

B Field Notes, Groundwater Sampling Forms, and YSI Calibration Log

C Data Quality Assessment, ADEC Checklist, SGS Laboratory Data Report



- Legend
-  Approximate Monitoring Well Location
 -  Approximate Former Bakery UST



**FORMER CARRS-FOODLAND
GROUNDWATER SAMPLING REPORT
FAIRBANKS, ALASKA**

Drawing
SITE MAP

Date	October 29, 2019	Scale	1 inch = 80 feet	Fig. No.	1
File Name	F1 Site Map_Foodland_19.mxd	Project No.	105.00774.19001		

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Table 1 - 2019 Former Carrs-Foodland Site Groundwater Monitoring Results

Compound in micrograms per Liter (µg/L)	Screening Criteria	Sample Locations ²			Trip Blank
	18 AAC 75, Table C, Groundwater Cleanup Level ¹	Primary: MW-3 19-Sep-19 1199795002	Duplicate: MW-4 19-Sep-19 1199795003	MW-34A 19-Sep-19 1199795001	Trip Blank 19-Sep-19 1199795004
		Conc. ³	Conc. ³	Conc. ³	Conc. ³
Fuels (AK102)					
Diesel Range Organics	1500	12100 Q	18500 Q	424 J,Q	--
Volatile Organic Compounds (SW8260C)					
1,1,1,2-Tetrachloroethane	5.7	[0.25] U	[0.25] U	[0.25] U	[0.25] U
1,1,1-Trichloroethane	8000	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,1,2,2-Tetrachloroethane	0.76	[0.25] U	[0.25] U	[0.25] U	[0.25] U
1,1,2-Trichloroethane	0.41	[0.2] U	[0.2] U	[0.2] U	[0.2] U
1,1-Dichloroethane	28	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,1-Dichloroethene	280	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,1-Dichloropropene	--	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,2,3-Trichlorobenzene	7	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,2,3-Trichloropropane	0.0075	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,2,4-Trichlorobenzene	4	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,2,4-Trimethylbenzene	56	145	155	[0.5] U	[0.5] U
1,2-Dibromo-3-chloropropane	--	[5] U	[5] U	[5] U	[5] U
1,2-Dibromoethane	0.075	[0.0375] U	[0.0375] U	[0.0375] U	[0.0375] U
1,2-Dichlorobenzene	300	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,2-Dichloroethane	1.7	[0.25] U	[0.25] U	[0.25] U	[0.25] U
1,2-Dichloropropane	8.2	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,3,5-Trimethylbenzene	60	62.6	67.6	[0.5] U	[0.5] U
1,3-Dichlorobenzene	300	[0.5] U	[0.5] U	[0.5] U	[0.5] U
1,3-Dichloropropane	--	[0.25] U	[0.25] U	[0.25] U	[0.25] U
1,4-Dichlorobenzene	4.8	[0.25] U	[0.25] U	[0.25] U	[0.25] U
2,2-Dichloropropane	--	[0.5] U	[0.5] U	[0.5] U	[0.5] U
2-Butanone (MEK)	5600	10.5	12.1	[5] U	[5] U
2-Chlorotoluene	--	[0.5] U	[0.5] U	[0.5] U	[0.5] U
2-Hexanone	38	[5] U	[5] U	[5] U	[5] U
4-Chlorotoluene	--	[0.5] U	[0.5] U	[0.5] U	[0.5] U
4-Isopropyltoluene	--	7.24	7.75	[0.5] U	[0.5] U
4-Methyl-2-pentanone (MIBK)	6300	[5] U	[5] U	[5] U	[5] U
Benzene	4.6	0.34 J	0.36 J	[0.2] U	[0.2] U
Bromobenzene	62	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Bromochloromethane	--	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Bromodichloromethane	1.3	[0.25] U	[0.25] U	[0.25] U	[0.25] U
Bromoform	33	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Bromomethane	7.5	[2.5] U	[2.5] U	[2.5] U	[2.5] U
Carbon disulfide	810	[5] U	[5] U	[5] U	[5] U
Carbon tetrachloride	4.6	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Chlorobenzene	78	[0.25] U	[0.25] U	[0.25] U	[0.25] U
Chloroethane	21000	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Chloroform	2.2	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Chloromethane	190	[0.5] U	[0.5] U	[0.5] U	[0.5] U
cis-1,2-Dichloroethene	36	[0.5] U	[0.5] U	4.06	[0.5] U
cis-1,3-Dichloropropene	4.7	[0.25] U	[0.25] U	[0.25] U	[0.25] U
Dibromochloromethane	8.7	[0.25] U	[0.25] U	[0.25] U	[0.25] U
Dibromomethane	8.3	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Dichlorodifluoromethane	200	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Ethylbenzene	15	20	21.2	[0.5] U	[0.5] U
Freon-113	10000	[5] U	[5] U	[5] U	[5] U
Hexachlorobutadiene	1.4	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Isopropylbenzene (Cumene)	450	7.24	7.7	[0.5] U	[0.5] U
Methylene chloride	110	[2.5] U	[2.5] U	[2.5] U	[2.5] U
Methyl-t-butyl ether	140	[5] U	[5] U	[5] U	[5] U
Naphthalene	1.7	99	109	[0.5] U	[0.5] U
n-Butylbenzene	1000	[0.5] U	[0.5] U	[0.5] U	[0.5] U
n-Propylbenzene	660	13.3	14.5	[0.5] U	[0.5] U
o-Xylene	--	30.2	32.4	[0.5] U	[0.5] U
P & M -Xylene	--	58.3	62.2	[1] U	[1] U
sec-Butylbenzene	2000	3.61	3.95	[0.5] U	[0.5] U
Styrene	1200	[0.5] U	[0.5] U	[0.5] U	[0.5] U
tert-Butylbenzene	690	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Tetrachloroethene	41	[0.5] U	[0.5] U	0.76 J	[0.5] U
Toluene	1100	0.31 J	[0.5] U	[0.5] U	[0.5] U

Table 1 - 2019 Former Carrs-Foodland Site Groundwater Monitoring Results

Compound in micrograms per Liter (µg/L)	Screening Criteria	Sample Locations ²			Trip Blank
	18 AAC 75, Table C, Groundwater Cleanup Level ¹	Primary: MW-3 19-Sep-19 1199795002	Duplicate: MW-4 19-Sep-19 1199795003	MW-34A 19-Sep-19 1199795001	Trip Blank 19-Sep-19 1199795004
		Conc. ³	Conc. ³	Conc. ³	Conc. ³
Volatile Organic Compounds (SW8260C) Continued					
trans-1,2-Dichloroethene	360	[0.5] U	[0.5] U	10.7	[0.5] U
trans-1,3-Dichloropropene	4.7	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Trichloroethene	2.8	[0.5] U	[0.5] U	16.2	[0.5] U
Trichlorofluoromethane	5200	[0.5] U	[0.5] U	[0.5] U	[0.5] U
Vinyl acetate	410	[5] U	[5] U	[5] U	[5] U
Vinyl chloride	0.19	[0.075] U	[0.075] U	[0.075] U	[0.075] U
Xylenes (total) ⁴	190	88.5	94.7	[1] U	[1] U
PAH SIM (SW8270D LV)					
1-Methylnaphthalene	11	49.4 Q	42 Q-	--	--
2-Methylnaphthalene	36	42.4 Q	35.5 Q-	--	--
Acenaphthene	530	0.846 Q	0.703 Q-	--	--
Acenaphthylene	260	[0.024] U	[0.024] UJ	--	--
Anthracene	43	[0.024] U	[0.024] UJ	--	--
Benzo(a)Anthracene	0.3	[0.024] U	[0.024] UJ	--	--
Benzo(a)pyrene	0.25	[0.0096] U	[0.0096] UJ	--	--
Benzo(b)Fluoranthene	2.5	[0.024] U	[0.024] U	--	--
Benzo(g,h,i)perylene	0.26	[0.024] U	[0.024] UJ	--	--
Benzo(k)fluoranthene	0.8	[0.024] U	[0.024] UJ	--	--
Chrysene	2.0	[0.024] U	[0.024] UJ	--	--
Dibenzo(a,h)anthracene	0.25	[0.0096] U	[0.0096] UJ	--	--
Fluoranthene	260	[0.024] U	[0.024] U	--	--
Fluorene	290	2.18 Q	1.77 Q-	--	--
Indeno[1,2,3-c,d] pyrene	0.19	[0.024] U	[0.024] UJ	--	--
Naphthalene	1.7	43.7 Q	36.4 Q-	--	--
Phenanthrene	170	1.24 Q	0.98 Q-	--	--
Pyrene	120	[0.024] U	[0.024] U	--	--

Notes:

Bold and yellow values indicate an exceedance of Method Two Groundwater Cleanup Levels (footnote 1).

[0.0005] - Orange values indicate undetectable results with LODs above applicable ADEC screening criteria.

- 1 ADEC Method Two Groundwater Cleanup Levels , 18 AAC 75.345, Table C (October 27, 2018).
- 2 The field sample identification number, date collected, and laboratory sample identification number are provided.
- 3 Detected results are listed in µg/L in this column. For non-detect analytes, the highest LOD is shown in [brackets].
- 4 Total values were the summation of detected compounds only. The highest LOD was listed for non-detect compounds.

Data Flags:

- U Undetectable, LOD is listed in brackets to the right.
- J Estimated value because the level is below the laboratory LOQ, but above the DL.
- UJ Undetectable result with an estimated LOD.
- Q Estimated value due to one or more quality control failures. Where applicable, a "+" or "-" was appended to indicate a high or low bias.

Abbreviations:

- Not applicable or screening criteria does not exist for this compound
- AAC Alaska Administrative Code
- ADEC Alaska Department of Environmental Conservation
- AK Alaska method
- DL detection limit
- LOD limit of detection
- LOQ limit of quantitation
- LV low volume
- µg/L micrograms per liter
- PAH polycyclic aromatic hydrocarbons
- SIM selective ion monitoring

**Table 2: Cumulative Groundwater Sample Results for Select Analytes of Interest in Monitoring Well MW-3
Former Carrs Foodland Site**

Analyte	DRO	Benzene	Toluene	Ethylbenzene	Xylenes	1,2,4-Trimethylbenzene	PCE	TCE	Naphthalene ³	Reference	
Groundwater Cleanup Level⁴ (µg/L except for DRO)	1.5 (mg/L)	4.6	1100	15	190	56	41	2.8	1.7		
Well ID	Sample Date	Result ^{1,2} (µg/L)									
MW-3	Jan-94	--	35	1	52	180	--	--	--	1	
MW-3	Apr-94	--	38	2	51	230	--	--	--	1	
MW-3	Jul-94	--	8	<1	42	140	--	--	--	1	
MW-3	Oct-94	--	28	2	44	250	--	--	--	1	
MW-3	Jan-95	--	32	1	62	260	--	--	--	1	
MW-3	Oct-95	--	10	1	40	124	--	--	--	1	
MW-3	11/20/2002	11.8	3.7	<2	32	121	--	--	--	1	
MW-3	9/4/2009	13.6	1.62	ND	27	108	--	--	--	2	
MW-3	9/1/2012	96.3	3.12	1.92	15.8	83.2	--	--	--	3	
MW-3	10/16/2013	66.4	2.61	0.82	20.1	82.7	--	--	--	4	
MW-3	9/20/2018	24.8	0.41	ND	15.9	71	111	ND	ND	77	5
MW-3	9/19/2019	18.5	0.36 J	0.31 J	21.2	94.7	155	ND	ND	109	6

Abbreviations

 Exceeds screening criteria

DRO Diesel range organics

J Flag indicating the value is estimated below the limit of quantitation (LOQ).

µg/L micrograms per liter

mg/L milligrams per liter

-- Sample not analyzed for this compound.

ND Analyte not detected

PCE tetrachloroethylene

TCE trichloroethylene

Notes

1-If a duplicate sample was collected, the higher of the two values is listed.

2-All results reported in µg/L except for DRO which is reported in mg/L.

3-Naphthalene was analyzed by methods SW8260C and SW8270D LV. The higher of the two values is listed.

4-ADEC Method Two Groundwater Cleanup Levels, 18 AAC 75.345, Table C (October 27, 2018). All units in µg/L except for DRO which is in mg/L.

References

1- Shannon & Wilson, Inc., 2002. Level 1 Environmental Site Assessment, Carrs/Safeway Foodland, Fairbanks, Alaska. November 18.

2- SGS North America, Inc. (SGS), 2009. Laboratory Report of Analysis. September 17.

3- SLR International Corp, 2012. Bachner/Foodland Site Transmittal of Validated Data. October 4.

4- SGS, 2013. Laboratory Report of Analysis. Report Number 1138619. October 29.

5- SGS, 2018. Laboratory Report of Analysis. Report Number 1189788. October 2.

6- SGS, 2019. Laboratory Report of Analysis. Report Number 1199795. October 17.

Appendix A
Photograph Log



Photo 1: Location of monitoring well MW-3.



Photo 2: Monitoring well MW-3 during purging.


	Groundwater Sampling at the Former Carrs-Foodland Site Fairbanks, Alaska
SITE PHOTOGRAPHS 2019	Job No: 105.00774.19001



Photo 3: Location of monitoring well MW-34A.



Photo 4: Monitoring well MW-34A during purging and runoff water removal.



SITE PHOTOGRAPHS
2019

Groundwater Sampling at the Former
Carrs-Foodland Site
Fairbanks, Alaska

Job No: 105.00774.19001

Appendix B

Field Notes, Groundwater Sampling Forms, and YSI Calibration Log

26 9/19/19

A. Johnson, Carrs Field, cloudy, 50°F

1820 arrive MW-34A

1841 begin purge MW-34A

1900 sample time MW-34A

1915 replace mangled well plug MW-34A

1920 arrive MW-3

1930 begin purge MW-3

2000 sample time MW-3

2100 sample time MW-4, dup of MW-3

2050 demob at office, decom equipment

2100 end of day

~~Austin Johnson~~

27

Plot in the Rain

Water Parameter Meter Calibration Log



Date: 9/17/19 Time: 1420 Calibration By: L. COURSEY-WILLIS
 Meter Manufacturer and Identification #: YSI 556 07J100651

Parameter	Standard	10°C True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.06	CC610590	5/30/19	3/19/2021	6.80	7.07	± 0.10
	4.00	4.00	CC599844	9/17/19	1/14/21	4.16	3.98	± 0.10
	10.00	10.18	CC568774	7/8/19	7/6/20	10.18	10.18	± 0.10
Sp Cond (mS/cm)	1.413	1.050 1.251	CC17956	7/10/19	12/15/19	1.300	1.251	± 10%
ORP (mV)	240	240	1600	7/9/19	05/22	242	240.1	-----
DO*	H ₂ O	100%	-	-	-	94.4%	98.3 99.0%	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)
 * Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: 9/18/19 Time: 0720 Calibration By: L. COURSEY-WILLIS
 Meter Manufacturer and Identification #: YSI 556 07J100651

Parameter	Standard	21°C True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.01	CC610590	5/30/19	3/19/21	7.03	7.01	± 0.10
	4.00	4.00	CC599844	9/17/19	1/14/21	4.04	4.00	± 0.10
	10.00	10.06	CC568774	7/8/19	7/6/20	10.25	10.09	± 0.10
Sp Cond (mS/cm)	1.413	1.305	CC17956	7/10/19	12/15/19	1.248 1.352	1.305	± 10%
ORP (mV)	240	240	1600	7/9/19	5/22	234.4	240.2	-----
DO*	H ₂ O	100%	-	-	-	104 96.4	96.6	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)
 * Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: 9/19/19 Time: 0950 Calibration By: A. Johnson
 Meter Manufacturer and Identification #: YSI 556 07J100651

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.01	CC610590	5/30/19	3/19/21	6.86	7.01	± 0.10
	4.00	4.00	CC599844	9/17/19	1/14/21	4.17	4.00	± 0.10
	10.00	10.16	CC568774	7/8/19	7/6/20	10.25	10.18	± 0.10
Sp Cond (mS/cm)	1.413	1.413	CC17956	7/10/19	12/15/19	1.272	1.413	± 10%
ORP (mV)	240	240	1600	7/9/19	5/2022	238.1	240.0	-----
DO*	H ₂ O	240.5	-	-	-	95.9	98.7	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)
 * Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table



Groundwater Sampling Form

Site/Client Name: <u>Carrs Foodland/Bachner</u>		Well ID: <u>MW-3</u>								
Project #: <u>104,00774,19001</u>		Sample ID: <u>MW-3</u>								
Sampled By: <u>A. Johnson</u>		Sample Time: <u>2000</u>	Sample Date: <u>9/19/19</u>							
Weather Conditions: <u>cloudy, 45°F</u>		Duplicate ID: <u>MW-4 @ 2100</u>								
Sampling Method: <input checked="" type="checkbox"/> Low Flow <input type="checkbox"/> Other _____		MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>2</u> in.	Screen Interval: _____ ft BGS to _____ ft BGS							
Well Condition: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor (if fair or poor explain in Notes)		Stickup <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; If yes, <u>2.18</u> ft above ground								
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>16.33</u>		Tubing/Pump Depth (ft. BTOC): <u>19.0</u>								
Total Depth (ft. BTOC): <u>22.10</u>		Purge Start Time (24-hr): <u>1930</u>								
Depth to Product (ft. BTOC): <u>-</u>		Purge End Time (24-hr): <u>1949</u>								
Product Thickness (ft): <u>-</u>		Total Purge Time (min): <u>19</u>								
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) _____ X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;										
Min. purge volume if required: purge volume (gal) = volume of water/ft _____ (gal/ft) X Water column thickness _____ (ft) X # of casing volumes _____ = _____ gal										
Well Diameter - gal/ft	1" - 0.041 gal/ft	2" - 0.163 gal/ft	4" - 0.653 gal/ft							
6" - 1.469 gal/ft										
Water Quality Parameters										
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal) (Circle one)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max 0.3 ft)
1935	<u>450</u> <u>0.4</u>	0.6	8.66	1875	1.09	6.70	2.6	-	16.55	0.22
1940		1.2	8.72	1854	0.71	6.74	-14.5	-	16.55	0.22
1943		1.3	8.72	1840	0.63	6.75	-19.3	-	16.56	0.23
1946		1.7	8.71	1837	0.60	6.75	-22.0	-	16.57	0.24
1949		2.1	8.71	1831	0.59	6.75	-23.1	-	16.56	0.23
Parameter Stable (Check applicable) ✓ ✓ ✓ ✓ ✓ ✓ ✓										
Sample Color: <u>light brown</u>		Sample Odor: <u>fuel</u>		Sheen: <u>light</u>						
Analytical Sampling										
Analyses	Check Applicable	Comments								
DRO	✓									
VOC 8260c	✓									
PAH 8270-SIM	✓									
Notes:										
Equipment: Pump Type <u>monsoon</u> Tubing (Type/Length) <u>3/8" tetlon lined</u> Bailer Type <u>-</u>										
Water Level Meter <u>Solinst</u> Multi-Parameter Meter (Make/SN#) <u>YSI 556</u>										
Turbidity Meter (Make/SN#) <u>-</u> Filter Lot # <u>-</u>										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input checked="" type="checkbox"/> Containerized <input type="checkbox"/> Treated (how?) _____										



Groundwater Sampling Form

Site/Client Name: <u>Carris Foodland/ Bachner</u>				Well ID: <u>MW-34A</u>						
Project #: <u>104.00774.19001</u>				Sample ID: <u>MW-34A</u>						
Sampled By: <u>A. Johnson</u>				Sample Time: <u>1900</u>		Sample Date: <u>9/19/19</u>				
Weather Conditions: <u>cloudy, 90°F</u>				Duplicate ID: <u>-</u>						
Sampling Method: <input checked="" type="checkbox"/> Low Flow <input type="checkbox"/> Other _____				MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blank Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Well Information										
Well Type: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		Well Diameter: <u>2</u> in.		Screen Interval: _____ ft BGS to _____ ft BGS		Well Condition: <input type="checkbox"/> Good <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor (if fair or poor explain in Notes)				
				Stickup <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; If yes, _____ ft above ground						
Gauging/Purging Information										
Depth to Water (ft BTOC): <u>12.85</u>				Tubing/Pump Depth (ft. BTOC): <u>15.0</u>						
Total Depth (ft BTOC): <u>18.10</u>				Purge Start Time (24-hr) <u>1841</u>						
Depth to Product (ft. BTOC) <u>-</u>				Purge End Time (24-hr) <u>1900</u>						
Product Thickness (ft) <u>-</u>				Total Purge Time (min) <u>19</u>						
LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) _____ X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;										
Min. purge volume if required: purge volume (gal) = volume of water/ft _____ (gal/ft) X Water column thickness _____ (ft) X # of casing volumes _____ = _____ gal										
Well Diameter - gal/ft		1" - 0.041 gal/ft		2" - 0.163 gal/ft		4" - 0.653 gal/ft		6" - 1.469 gal/ft		
Water Quality Parameters										
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])										
Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L or gal) (Circle one)	Temp (°C) (± 3%)	Specific Conductance (µS/cm²) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max 0.3 ft)
1846	450	0.6	6.94	1084	1.41	6.25	156.4	-	12.90	0.05
1851		1.2	5.97	1012	1.59	6.38	130.1	-	12.92	0.07
1854		1.4	5.93	1010	1.39	6.41	119.1	-	12.96	0.11
1857		1.8	5.89	1009	1.32	6.44	116.2	-	12.98	0.13
1900		2.2	5.92	1002	1.16	6.48	114.1	-	12.98	0.13
Parameter Stable (Check applicable)			✓	✓	✓	✓	✓	✓	✓	✓
Sample Color: <u>light brown</u>			Sample Odor: <u>none</u>			Sheen: <u>none</u>				
Analytical Sampling										
Analyses	Check Applicable	Comments								
DRO	✓									
VOC 8260c	✓									
Notes: <u>Well plug needed to be replaced, was mangled.</u>										
Equipment: Pump Type <u>monsoon</u> Tubing (Type/Length) <u>3/8" teflon lined</u> Bailer Type <u>-</u> Water Level Meter <u>Solinst</u> Multi-Parameter Meter (Make/SN#) <u>YSI 556</u> Turbidity Meter (Make/SN#) <u>-</u> Filter Lot # <u>-</u>										
Purge Water Handling: <input type="checkbox"/> Discharged to surface <input checked="" type="checkbox"/> Containerized <input type="checkbox"/> Treated (how?) _____										

Appendix C

Data Quality Assessment, ADEC Checklist, and Laboratory Report

**LABORATORY DATA
QUALITY ASSURANCE REVIEW
BACHNER**

**2019 GROUNDWATER MONITORING
AT THE FORMER CARRS-FOODLAND SITE
IN FAIRBANKS, AK**

OCTOBER 2019

Prepared by: Francesca Risse
Reviewed by: Jennifer McLean

SLR Project Number: 104.00774.19001
ADEC Number: 102.38.027
ADEC Hazard ID: 1397

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
AK	Alaska
ADEC	Alaska Department of Environmental Conservation
°C	degrees Celsius
CCV	continuing calibration verification
COC	chain of custody
DL	detection limit
DRO	diesel range organics
EDD	electronic data deliverable
GW	groundwater
LCL	lower control limit
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
LV	low volume
MS	matrix spike
MSD	matrix spike duplicate
NFG	National Functional Guidelines
PAH	polynuclear aromatic hydrocarbons
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
QA	quality assurance
QAR	quality assurance review
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SIM	selective ion monitoring
SLR	SLR International Corporation
SGS	SGS North America, Inc.
UCL	upper control limit
µg/L	micrograms per liter
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

Introduction

This report summarizes a review of analytical data for samples collected on September 19, 2019 in support of the groundwater monitoring activities at the former Carrs-Foodland site in Fairbanks, Alaska. Samples were collected by SLR International Corporation (SLR). SGS North America, Inc (SGS) provided analytical support to the project. SGS maintains a current Alaska Department of Environmental Conservation (ADEC) Contaminated Sites approval number (17-021) for analytical methods of interest, as applicable. Table 1 provides a summary of the work order, sample receipt, analytical methods, and analytes.

Table 1 Sample Summary

SDG	Date Collected	Date Received by Laboratory	Temp. Blank	Matrix	Analytical Method	Analyte	Trip Blank ¹
1199795	9/19/19	Fairbanks: 9/20/19 Anchorage: 9/24/19	Fairbanks ² : 0.3°C Anchorage ² : 2.8°C 4.6°C	GW	SW8260C AK102 LV SW8270D LV	VOCs DRO PAH SIM	Required NA NA

Notes:

1 – This type of sample requires a trip blank to be included in the cooler, with the trip blank noted on the chain of custody (COC).

2 – All samples arrived at SGS Fairbanks in one cooler and was repackaged for shipment to SGS Anchorage in two coolers.

Acronyms:

AK - Alaska

°C – degrees Celsius

DRO – diesel range organics

GW – groundwater

LV – low volume

NA – not applicable

PAH – polynuclear aromatic hydrocarbons

SDG – sample delivery group

SIM – selective ion monitoring

VOCs – volatile organic compounds

The laboratory final report was presented as a Level II deliverable and included documentation of the delivery group COC and sample receipt condition. A Microsoft Access compatible electronic data deliverable (EDD) was also provided. The laboratory report is provided electronically as Attachment 2.

Quality Assurance Program

A quality assurance (QA) program was followed for this project that addressed project administration, sampling, quality control (QC), and data review. SLR adhered to required and established sampling and COC protocols. The selected laboratory maintains an internal quality assurance program and standard operating procedures.

The analytical data was reviewed for consistency with any project-specific requirements in the Work Plan (SLR, 2018), ADEC Technical Memorandum *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling* (ADEC, 2017), *National Functional Guidelines for Superfund Organic Methods Data Review* (NFG, United States Environmental Protection Agency [USEPA] 2017), analytical method criteria, and laboratory criteria. An ADEC Laboratory Data Review Checklist was completed for the SDG and is included as Attachment 1 to this quality assurance review (QAR). A review for any anomalies to the project requirements for precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) are noted in this QAR, and any data qualifications discussed.

The data review included the following, as applicable:

- Reviewing COC records for completeness, signatures, and dates;
- Identifying any sample receipt or preservation anomalies that could impact data quality;
- Verifying that QC blanks (e.g., field blanks, equipment blanks, trip blanks, etc.) were properly prepared, identified, and analyzed;
- Evaluating whether laboratory reporting limits met project goals;
- Reviewing calibration verification recoveries, to include confirming that the laboratory did not identify that any Continuing Calibration Verification (CCV) recoveries or other calibration related criteria were outside applicable acceptance limits;
- Verifying that surrogate analyses were within recovery acceptance limits;
- Verifying that Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD) were within recovery acceptance limits;
- Evaluating the result relative percent difference (RPD) between primary and duplicate field samples, and LCS/LCSDs; and
- Providing an overall assessment of laboratory data quality and qualifying sample results if necessary.

Data Qualifications

As part of this QAR, qualifiers were applied to datum as determined necessary based on specified criteria or professional judgement. In all cases, the basis for qualification and the applied data flag are discussed in this QAR. Table 2 provides a list of potential qualifiers (i.e., flags). These data flags were appended to the data as appropriate.

Table 2 Data Qualifiers

Lab Qualifier (Flag)	NFG Qualifier (Flag)	Equivalent Project Qualifier (Flag) ^{1,2}	Definition
U	U	U	The analyte was analyzed for but was not detected above the detection limit (DL). This qualifier is appended by the laboratory.
J	NJ	J	The analyte has been “tentatively” or “presumptively” identified as present and the associated numerical value is the estimated concentration in the sample between the limit of quantitation (LOQ) and the DL. This qualifier is appended by the laboratory.
--	J	Q	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample, due to one or more laboratory quality control criteria failures (e.g., LCS recovery, surrogate spike recovery) or a matrix effect. Where applicable, a “+” or “-” was appended to indicate a high or low bias, respectively.
--	UJ	UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
--	R	R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
--	--	B	Blank contamination: The analyte was positively identified in the blank (e.g., trip blank and/or method blank) associated with the sample and the concentration reported for the sample was less than five times that of the blank (ten times for metals and common laboratory contaminants methylene chloride and acetone). Where applicable, “U” was appended prior to the “B” to indicate the blank detection was greater than the sample detection or both the blank detection and sample detection were below the limit of detection (LOD), and the result is likely a false positive. The greater of the sample detection or LOD was reported as non-detect in brackets.

Notes:

1 - Flags were appended to the data where applicable. The table presents laboratory, NFG and project equivalent qualifiers.

2 - Only flags in **bold** were applicable and appended to data for this project.

A discussion of the project data quality relative to PARCCS goals and summary of any anomalies or failures requiring data qualifiers follows.

Data Validation

Data Packages

The data package was checked for transcription errors, omissions, or other anomalies. No issues were noted with regards to the data package, except as noted below.

- Naphthalene was analyzed by Methods SW8260C and SW8270D. The SW8260C naphthalene results for parent sample MW-3 and field duplicate MW-4 were 99 µg/L and 109 µg/L. The SW8270D naphthalene results for these samples were 43.7 µg/L and 36.4 µg/L, approximately 30% to 40% of the SW8260C reported values. For naphthalene by Method SW8270D: the associated surrogate for MW-4 recovered slightly below acceptable limits (refer to the Surrogate Recovery section of this QAR for discussion) and LCSD RPD exceeded acceptable limits (see LCS and LCSD section for discussion). Due to these contributing factors, the SW8260C naphthalene results are considered more accurate quantitations of the true concentration.
- The case narrative noted that the laboratory report had been revised to include additional comments. No data were impacted.

Sample Receipt

The sample receipt documentation was checked for anomalies. No issues were noted with regards to the receipt of samples, except as noted below.

- The trip blank was not recorded on the COC. One trip blank was included in the cooler and accompanied the VOA vials and volatile samples during transit from and to the laboratory and in the field. The laboratory assigned the trip blank the ID of "Trip Blank" with a collection date and time of 9/19/19 at 19:00, which matches that of the earliest sample collected. The trip blank was analyzed appropriately, for VOCs by SW8260C, the same volatile method and analytes as the other samples on the SDG. No data were impacted.

Holding Times and Preservation

Samples were appropriately preserved and were submitted to SGS. Sample analyses were conducted within holding time criteria. No issues were noted with regards to sample preservation.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the appropriate frequencies. Analytes were not detected at or above the LOD in any method blanks.

Trip Blanks

One trip blank was analyzed for VOCs by Method SW8260C. Analytes were not detected at or above the LOD in the trip blank. The trip blank was not recorded on the COC. Refer to the Sample Receipt section for discussion.

Reporting Limits

For non-detectable results, LODs were compared to applicable regulatory criteria for the site. LODs were compared to 18 Alaska Administrative Code (AAC) 75.345 Table C, *Groundwater Cleanup Levels* (ADEC, 2018). Except as noted below, all analytes with results of non-detect had LODs at or below applicable regulatory criteria.

The LODs for 1,2,3-trichloropropane by Method SW8260C did not meet ADEC cleanup levels. This was due to typical laboratory methodology limitations. For this compound it is not possible to state with certainty the absence of target analyte below the reported LOD, but above the ADEC cleanup level. 1,2,3-trichloropropane data is limited in usability for that purpose. Data usability was considered minimally impacted. All data were usable without qualification.

Continuing Calibration Verifications

CCVs were analyzed at the appropriate frequencies. CCV data was included only in the EDD, not in the case narrative. All CCV recoveries were within acceptable limits as reviewed in the EDD, except as noted below.

- For bromomethane and chloroethane by Method SW8260C, one CCV recovered at 148% and 124% exceeding the upper control limit (UCL) of 120%. Since a high bias was indicated and all associated samples had results of non-detect for the impacted analytes, no data were affected. All data were usable without qualification.

Internal Standards

No internal standards were noted in the case narrative as being outside of acceptance limits. Internal standard performance was not otherwise presented in the report or in the electronic data deliverable. Internal standards criteria were considered met.

Surrogate Recovery Results

Surrogate analysis was performed at the required frequencies. All surrogate recoveries were within analytical method and SGS percent recovery acceptance limits, except as noted below.

- For PAH SIM by Method SW8270D, the 2-methylnaphthalene-d10 surrogate recovered at 44% in sample MW-4. This was slightly below the laboratory lower control limit (LCL) of 47%, but within NFG advisory limits of 30-130%. Analytes associated with the surrogate were: 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. The sample was re-extracted two weeks past hold time per the laboratory case narrative, with the surrogate within criteria and comparable results. However, as this was well past the hold time the re-extraction and re-analysis does not indicate accurate results. The data from the original within hold time analysis were reported with detected results for the impacted analytes qualified "Q-" to indicate estimated values with a low bias, and non-detect results were qualified "UJ" to indicate estimated reporting limits. Except for 2-methylnaphthalene for sample MW-4, all impacted data were either well above or well below applicable cleanup levels; therefore, the impact to data usability was considered minimal. All data were usable as qualified.

For sample MW-4, the 2-methylnaphthalene result of 35.5 Q- µg/L was slightly below the ADEC cleanup level of 36 micrograms per liter (µg/L). It is considered likely that with a more accurate result the field duplicate could have exceeded the ADEC cleanup level for this analyte. This data is usable only to determine an approximate, estimated low value for 2-methylnaphthalene. However, sample MW-4 is the field duplicate to parent sample MW-3, which exceeded cleanup level for this analyte. As the higher of the parent or field duplicate value is reported, the parent sample/duplicate pair result is already an exceedance of the ADEC cleanup level. The overall project data usability was not impacted.

Laboratory Control Samples and Laboratory Control Sample Duplicates

LCS and LCSDs were analyzed at the appropriate frequencies. Any LCS and LCSD recovery and RPD exceedances are noted below.

- For bromomethane by Method SW8260C, the LCS recovered at 148%, exceeding the acceptable UCL of 141%. Since all associated results were non-detectable, data were not impacted. All data were usable without qualification.
- For PAH SIM analytes shown in Table 3, LCS recoveries were slightly below the lower control limits (LCLs). An LCSD included in the batch had recoveries within acceptable limits for the affected analytes. Samples MW-3 and MW-4 were associated with this LCS/LCSD pair and were re-extracted two weeks past hold time, per the laboratory case narrative, with LCS recoveries within criteria and comparable results. As the re-extraction was well past the hold time, it is not indicative of accurate results. The data from the original within hold time analysis were reported. All associated results were non-detectable and were qualified “UJ” to indicated estimated reporting limits. As all affected data had LODs at least ten-fold below ADEC cleanup levels, data usability was not impacted. All data were usable as qualified.
- For PAH SIM analytes shown in Table 4, LCS/LCSD RPDs exceeded the UCL of 20%. Impacted analytes for associated samples MW-3 and MW-4 were qualified with “Q” for detected results to indicated estimated values with unknown bias. Non-detect results were considered unaffected by laboratory precision exceedances, thus qualification was considered unnecessary. While laboratory precision was not established for the affected analytes, a field duplicate pair was included in the batch and established field precision for all impacted analytes; therefore, data were minimally impacted. Results previously qualified “Q-“ due to surrogate failure were not additionally qualified as estimated with unknown bias. Except for 2-methylnaphthalene, discussed in the Surrogate Recovery section, all affected data were either well above or well below applicable ADEC cleanup levels; therefore, data usability was not impacted. All data were usable as qualified.

Table 3 LCS Recovery Exceedances

Sample Type	Batch	Method	Analyte	Recovery (%)	Lower – Upper Recovery Limits (%)
LCS	XXX 42332	8270D SIM LV	Benzo(a)Anthracene	56.6	59 - 120
			Benzo[a]pyrene	49.2	53 - 120
			Benzo[g,h,i]perylene	39.5	44 - 128
			Benzo[k]fluoranthene	50.7	54 - 125
			Chrysene	52.8	57 - 120
			Dibenzo[a,h]anthracene	32.8	44 - 131
			Indeno[1,2,3-c,d] pyrene	44.5	48 - 130

Table 4 LCSD RPD Exceedances

Sample Type	Batch	Method	Analyte	RPD (%)	RPD Limit (%)
LCS/LCSD	XXX 42332	8270D SIM LV	1-Methylnaphthalene	30.9	20
			2-Methylnaphthalene	32.2	20
			Acenaphthene	32.4	20
			Acenaphthylene	30.8	20
			Anthracene	29.6	20
			Benzo(a)Anthracene	26.8	20
			Benzo[a]pyrene	26.6	20
			Benzo[b]Fluoranthene	30.3	20
			Benzo[g,h,i]perylene	34.5	20
			Benzo[k]fluoranthene	29.2	20
			Chrysene	27	20
			Dibenzo[a,h]anthracene	33.5	20
			Fluoranthene	26.2	20
			Fluorene	33	20
			Indeno[1,2,3-c,d] pyrene	31.1	20
			Naphthalene	33.9	20
Phenanthrene	28.9	20			
Pyrene	25.9	20			

Matrix Spike and Matrix Spike Duplicate Samples

No matrix spikes (MSs) or matrix spike duplicates (MSDs) were analyzed in association with these samples.

Field Duplicates

The field duplicate sample frequency is presented in Table 5. Parent sample and field duplicates are presented in Table 6. For all methods and analytes, the duplicate frequency satisfied the requirement of one per 10 samples or less per matrix and analyte. Field duplicates were submitted blind to the laboratory.

All parent sample/field duplicate RPDs were within the ADEC required 30% for waters, except for one DRO exceedance noted in Table 7. DRO results for the parent sample, the field duplicate, and associated sample MW-34A were qualified “Q” to indicate estimated values with unknown bias. Because laboratory precision was established via the LCS/LCSD pair with an acceptable RPD, the impact to data was considered minimal. Additionally, all impacted results were either well above or well below the ADEC cleanup level. All data were usable as qualified.

Parent sample/field duplicate pairs with both results below the LOQ were considered acceptable without qualification.

Table 5 Field Duplicate Count

Number of Primary	Number of Field Duplicates	Method	Analytes
2	1	AK 102 LV	DRO
2	1	SW8260C	VOCs
1	1	SW8270D LV	PAH SIM

Table 6 Parent Samples and Field Duplicates

Matrix	Parent Sample	Field Duplicate	Method	Analytes
Groundwater	MW-3	MW-4	SW8260C AK102 LV SW8270D LV	VOCs DRO PAH SIM

Table 7 Field Duplicate RPD Exceedances

Method	Analyte	Primary: MW-3	Duplicate: MW-4	RPD (%)	Flag	ADEC Cleanup Level (µg/L) ¹
		Result (µg/L)	Result (µg/L)			
AK 102	DRO	12100	18500	42	Q	1500

Notes:

1 – Limits shown are 18 AAC 75, Table C (ADEC, 2018).

Laboratory Duplicate Samples

No laboratory duplicates were analyzed in association with these samples.

Overall Assessment**Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity Summary**

- Precision: Precision goals were met, except as noted in the Field Duplicates and LCS/LCSD sections.
- Accuracy: Accuracy goals were met, except as noted in the Data Packages, CCV, Surrogate Recovery, and LCS/LCSD sections.
- Representativeness: Representativeness goals were met. The samples were collected from usual locations.
- Comparability: Comparability goals were met. The same laboratory and methods were used.
- Completeness: Completeness goals were met. The data were 100% complete with respect to analysis.
- Sensitivity: Sensitivity goals were met, except as noted in the Reporting Limits section.

Several factors indicated inaccurate, primarily low recovery for numerous PAH SIM analytes. Anomalies included low surrogate recovery, low LCS recoveries, LCS/LCSD RPD failures, and Method SW8270D naphthalene results below those indicated by Method SW8260C. Data were appropriately qualified and is considered usable as described in this QAR.

Overall, this data were considered of good quality acceptable for use with the noted limitations and qualifications. No data were rejected.

References

ADEC (Alaska Department of Environmental Conservation), 2017. *Technical Memorandum Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling*. March.

ADEC, 2018. 18 AAC 75, *Oil and Other Hazardous Substances Pollution Control*. October 27.

SLR International Corporation (SLR), 2018. *Work Plan for Sampling Groundwater at the Carrs-Foodland Site in Fairbanks, AK*. August 7.

U.S. Environmental Protection Agency (USEPA), 2017. *National Functional Guidelines for Superfund Organic Methods Data Review*. January.

Attachment 1

ADEC Laboratory Data Review Checklist

Laboratory Data Review Checklist

Completed By:

Francesca Risse

Title:

Staff Engineer

Date:

October 17, 2019

CS Report Name:

2019 Groundwater Monitoring at the Former Carrs-Foodland Site

Report Date:

October 17, 2019

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1199795

ADEC File Number:

102.38.027

Hazard Identification Number:

1397

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and
- perform
- all of the submitted sample analyses?

 Yes No

Comments:

SGS North America, Inc is ADEC CS approved, approval number 17-021, and performed all analysis.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

 Yes No

Comments:

All analyses performed at SGS North America, Inc.

2. Chain of Custody (CoC)

- a. CoC information completed, signed, and dated (including released/received by)?

 Yes No

Comments:

- b. Correct Analyses requested?

 Yes No

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

 Yes No

Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

 Yes No

Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

 Yes No

Comments:

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No

Comments:

The trip blank was not noted on the COC. One trip blank was included in the cooler, and the trip blank accompanied the sample containers and samples at all times during transit from and to the laboratory and in the field. The laboratory assigned the trip blank the ID of "Trip Blank" with a collection date and time of 9/19/19 at 19:00, which matches that of the earliest sample collected.

- e. Data quality or usability affected?

Comments:

The trip blank was analyzed appropriately, for VOCs by SW8260C, the same method and analytes as the other samples on the SDG. No data were impacted.

4. Case Narrative

- a. Present and understandable?

Yes No

Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes No

Comments:

The case narrative noted a revised report to include additional comments.

- c. Were all corrective actions documented?

Yes No

Comments:

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

No impact.

5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

 Yes No

Comments:

Naphthalene was analyzed by Methods SW8260C and SW8270D. The SW8260C naphthalene results for parent sample MW-3 and field duplicate MW-4 were 99 µg/L and 109 µg/L. The SW8270D naphthalene results for these samples were 43.7 µg/L and 36.4 µg/L, approximately 30% to 40% of the SW8260C reported values. For naphthalene by Method SW8270D, the associated surrogate for MW-4 recovered slightly below acceptable limits (refer to the Surrogates section for discussion) and LCSD RPDs exceeded acceptable limits (see LCS and LCSD section for discussion). Due to these contributing factors, the SW8260C naphthalene results are considered to be more accurate quantitations of the true concentration.

- b. All applicable holding times met?

 Yes No

Comments:

- c. All soils reported on a dry weight basis?

 Yes No

Comments:

Not applicable. Only water samples were analyzed for this work order.

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

 Yes No

Comments:

Except as noted below, yes.
The LODs for 1,2,3-trichloropropane by Method SW8260C did not meet ADEC cleanup levels. This was due to typical laboratory methodology limitations.

- e. Data quality or usability affected?

 Yes No

Comments:

For 1,2,3-trichloropropane it is not possible to state with certainty the absence of target analyte below the laboratory LOD, but above the ADEC cleanup level. This data is limited in usability for that purpose. All data were considered usable without qualification.

6. QC Samples

- a. Method Blank

- i. One method blank reported per matrix, analysis and 20 samples?

 Yes No

Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes No

Comments:

iii. If above LOQ, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

N/A

v. Data quality or usability affected?

Comments:

No impact.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No

Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No

Comments:

No metals or inorganics were analyzed for this workorder.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No

Comments:

For bromomethane by Method SW8260C, the LCS recovered at 148%, exceeding the acceptable upper recovery limit of 141%.

For several PAH analytes in the LCS for batch XXX 42332, recoveries were slightly below the lower acceptable recovery limits (refer to the LCS/LCSD section, Table 3 of the QAR for full list of affected analytes).

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No

Comments:

For all PAH analytes in the LCSD for batch XXX 42332, RPDs exceeded the upper acceptable limit.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

For the bromomethane %R exceedance, all associated results were non-detect and a high bias was indicated; therefore, no data were impacted.

For the PAH %R and RPD exceedances, samples MW-3 and MW-4 were affected.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

For the PAH %R and RPD exceedances, all affected samples were qualified “Q” for detected results to indicate estimated values with unknown bias and “UJ” for non-detect results to indicated estimated reporting limits. Results previously qualified “Q-“ due to surrogate failure were not additionally qualified as estimated with unknown bias.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

For the PAH %R exceedances, associated samples were re-extracted past hold time per the laboratory case narrative, with LCS recoveries within criteria and comparable results; however, this does not indicate accurate results as it was well past the hold time. The data from the original in hold time analysis were reported. An LCSD included in the batch had recoveries within acceptable limits for the affected analytes. All associated results were non-detect, with LODs at least 10-fold below the ADEC cleanup levels; therefore, data usability was not impacted. All data were usable as qualified.

For the PAH RPD exceedances, a field duplicate pair was included in the batch and established field precision for all analytes with RPDs within acceptable limits; therefore, data were minimally impacted. All data were usable as qualified.

- c. Surrogates – Organics Only

- i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No

Comments:

The surrogate 2-methylnaphthalene-d10 recovered at 44% in sample MW-4 for PAH, slightly below the acceptable lower laboratory limit of 47%, but within acceptable NFG limits of 30-130%.

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

The associated PAH detected results were qualified “Q-“ to indicated estimated values with low bias, and non-detect results were qualified “UJ” to indicate estimated reporting limits.

- iv. Data quality or usability affected?

Comments:

Analytes associated with the surrogate failure were: 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. The sample was re-extracted two weeks past hold time per the laboratory case narrative, with the surrogate within criteria and comparable results. However, as this was well past the hold time the re-extraction and re-analysis does not indicate accurate results. The data from the original within hold time analysis were reported. Except for 2-methylnaphthalene for sample MW-4, all impacted data were either well above or well below applicable cleanup levels; therefore, the impact to data usability was considered minimal. All data were usable as qualified.

For sample MW-4, the 2-methylnaphthalene result of 35.5 Q- $\mu\text{g/L}$ was slightly below the ADEC cleanup level of 36 micrograms per liter ($\mu\text{g/L}$). It is considered likely that with a more accurate result the field duplicate could have exceeded the ADEC cleanup level for this analyte. This data is usable only to determine an approximate, estimated low value for 2-methylnaphthalene. However, sample MW-4 is the field duplicate to parent sample MW-3, which exceeded cleanup level for this analyte. As the higher of the parent or field duplicate value is reported, the parent sample/duplicate pair result is already an exceedance of the ADEC cleanup level. The overall project data usability was not impacted.

- d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No

Comments:

iii. All results less than LOQ?

Yes No

Comments:

iv. If above LOQ, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

No impact.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

MW-4 was a duplicate of MW-3.

iii. Precision – All relative percent differences (RPD) less than specified DQOs?

(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No

Comments:

The RPD for DRO exceeded criteria for waters at 42%.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The parent sample/duplicate results and the associated sample MW-34A were qualified "Q" to indicate an estimated result with unknown bias. Laboratory precision was established by an acceptable LCS/LCSD RPD, thus the impact of the field precision failure to data was considered minimal. All data were usable as qualified.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

Yes No Not Applicable

Dedicated or disposable equipment was used for the collection of all samples.

i. All results less than LOQ?

Yes No

Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No

Comments:

Attachment 2

Laboratory Deliverable

(Data package)

Laboratory Report of Analysis

To: SLR Alaska-Anchorage
543 3rd Ave, Suite 235
Fairbanks, AK 99701
(907) 452-2252

Report Number: **1199795**

Client Project: **104.00774.19001 - Foodland**

Dear Carl Benson,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs

Sincerely,
SGS North America Inc.



Justin Nelson
2019.10.17
11:33:37 -08'00'

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **SLR Alaska-Anchorage**
 SGS Project: **1199795**
 Project Name/Site: **104.00774.19001 - Foodland**
 Project Contact: **Carl Benson**

Refer to sample receipt form for information on sample condition.

MW-3 (1199795002) PS

8270D SIM - LCS recovery for several analytes did not meet QC criteria. The sample was re-extracted past hold-time. LCS recovery was within QC criteria and results are comparable. The in-hold data is reported

MW-4 (1199795003) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold-time. Surrogate recovery was within QC criteria and results are comparable. The in-hold data is reported.

8270D SIM - LCS recovery for several analytes did not meet QC criteria. The sample was re-extracted past hold-time. LCS recovery was within QC criteria and results are comparable. The in-hold data is reported

LCS for HBN 1799947 [XXX/42332 (1534131) LCS

8270D SIM - PAH LCS recovery for several analytes do not meet QC criteria.

LCS for HBN 1800230 [VXX/34986 (1535558) LCS

8260C - LCS recovery for bromomethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

LCSD for HBN 1799947 [XXX/4233 (1534132) LCSD

8270D SIM - PAH LCS/LCSD RPD for several analytes do not meet QC criteria.

Revised Report - This report has been reissued to include additional case narrative comments.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIM LV (PAH)				
1534131	LCS for HBN 1799947 [XXX/42332	XMS11778	Benzo[a]pyrene	BLC
1534131	LCS for HBN 1799947 [XXX/42332	XMS11778	Benzo[b]Fluoranthene	RP
1534131	LCS for HBN 1799947 [XXX/42332	XMS11778	Benzo[k]fluoranthene	BLC
1534132	LCSD for HBN 1799947 [XXX/4233	XMS11778	Benzo[a]pyrene	BLC
1534132	LCSD for HBN 1799947 [XXX/4233	XMS11778	Benzo[b]Fluoranthene	RP
1534132	LCSD for HBN 1799947 [XXX/4233	XMS11778	Benzo[k]fluoranthene	PNF
1536917	CVC for HBN 1800521 [XMS/11778	XMS11778	Benzo[b]Fluoranthene	RP
1536917	CVC for HBN 1800521 [XMS/11778	XMS11778	Benzo[k]fluoranthene	PNF
SW8260C				
1199795002	MW-3	VMS19508	4-Isopropyltoluene	SP
1199795003	MW-4	VMS19508	4-Isopropyltoluene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-34A	1199795001	09/19/2019	09/24/2019	Water (Surface, Eff., Ground)
MW-3	1199795002	09/19/2019	09/24/2019	Water (Surface, Eff., Ground)
MW-4	1199795003	09/19/2019	09/24/2019	Water (Surface, Eff., Ground)
Trip Blank	1199795004	09/19/2019	09/24/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO Low Volume (W)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 10/17/2019 11:25:11AM

Detectable Results Summary

Client Sample ID: **MW-34A**
 Lab Sample ID: 1199795001
Semivolatile Organic Fuels
Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.424J	mg/L
cis-1,2-Dichloroethene	4.06	ug/L
Tetrachloroethene	0.760J	ug/L
trans-1,2-Dichloroethene	10.7	ug/L
Trichloroethene	16.2	ug/L

Client Sample ID: **MW-3**
 Lab Sample ID: 1199795002
Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	49.4	ug/L
2-Methylnaphthalene	42.4	ug/L
Acenaphthene	0.846	ug/L
Fluorene	2.18	ug/L
Naphthalene	43.7	ug/L
Phenanthrene	1.24	ug/L
Diesel Range Organics	12.1	mg/L
1,2,4-Trimethylbenzene	145	ug/L
1,3,5-Trimethylbenzene	62.6	ug/L
2-Butanone (MEK)	10.5	ug/L
4-Isopropyltoluene	7.24	ug/L
Benzene	0.340J	ug/L
Ethylbenzene	20.0	ug/L
Isopropylbenzene (Cumene)	7.24	ug/L
Naphthalene	99.0	ug/L
n-Propylbenzene	13.3	ug/L
o-Xylene	30.2	ug/L
P & M -Xylene	58.3	ug/L
sec-Butylbenzene	3.61	ug/L
Toluene	0.310J	ug/L
Xylenes (total)	88.5	ug/L

Semivolatile Organic Fuels
Volatile GC/MS

Detectable Results Summary

 Client Sample ID: **MW-4**

Lab Sample ID: 1199795003

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	42.0	ug/L
2-Methylnaphthalene	35.5	ug/L
Acenaphthene	0.703	ug/L
Fluorene	1.77	ug/L
Naphthalene	36.4	ug/L
Phenanthrene	0.980	ug/L

Semivolatile Organic Fuels
Volatile GC/MS

Diesel Range Organics	18.5	mg/L
1,2,4-Trimethylbenzene	155	ug/L
1,3,5-Trimethylbenzene	67.6	ug/L
2-Butanone (MEK)	12.1	ug/L
4-Isopropyltoluene	7.75	ug/L
Benzene	0.360J	ug/L
Ethylbenzene	21.2	ug/L
Isopropylbenzene (Cumene)	7.70	ug/L
Naphthalene	109	ug/L
n-Propylbenzene	14.5	ug/L
o-Xylene	32.4	ug/L
P & M -Xylene	62.2	ug/L
sec-Butylbenzene	3.95	ug/L
Xylenes (total)	94.7	ug/L

Print Date: 10/17/2019 11:25:12AM

Results of MW-34A

Client Sample ID: **MW-34A**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795001
 Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.424 J	0.577	0.173	mg/L	1		10/07/19 23:51
Surrogates							
5a Androstane (surr)	73.5	50-150		%	1		10/07/19 23:51

Batch Information

Analytical Batch: XFC15377
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/07/19 23:51
 Container ID: 1199795001-A

Prep Batch: XXX42382
 Prep Method: SW3520C
 Prep Date/Time: 10/02/19 08:49
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of MW-34A

Client Sample ID: **MW-34A**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795001
 Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		09/30/19 15:48
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/30/19 15:48
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
Benzene	0.200 U	0.400	0.120	ug/L	1		09/30/19 15:48
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
Bromoform	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Bromomethane	2.50 U	5.00	1.50	ug/L	1		09/30/19 15:48
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
Chloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48

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J flagging is activated

Results of MW-34A

Client Sample ID: **MW-34A**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795001
 Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Chloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
cis-1,2-Dichloroethene	4.06	1.00	0.310	ug/L	1		09/30/19 15:48
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 15:48
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Freon-113	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		09/30/19 15:48
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
Naphthalene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/30/19 15:48
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Styrene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Tetrachloroethene	0.760 J	1.00	0.310	ug/L	1		09/30/19 15:48
Toluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
trans-1,2-Dichloroethene	10.7	1.00	0.310	ug/L	1		09/30/19 15:48
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Trichloroethene	16.2	1.00	0.310	ug/L	1		09/30/19 15:48
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 15:48
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		09/30/19 15:48
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		09/30/19 15:48
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/30/19 15:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		09/30/19 15:48
4-Bromofluorobenzene (surr)	101	85-114		%	1		09/30/19 15:48
Toluene-d8 (surr)	98	89-112		%	1		09/30/19 15:48

Results of MW-34A

Client Sample ID: **MW-34A**
Client Project ID: **104.00774.19001 - Foodland**
Lab Sample ID: 1199795001
Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
Received Date: 09/24/19 10:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19508
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/30/19 15:48
Container ID: 1199795001-C

Prep Batch: VXX34986
Prep Method: SW5030B
Prep Date/Time: 09/30/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-3

Client Sample ID: **MW-3**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795002
 Lab Project ID: 1199795

Collection Date: 09/19/19 20:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	49.4	0.481	0.144	ug/L	10		10/08/19 19:39
2-Methylnaphthalene	42.4	0.481	0.144	ug/L	10		10/08/19 19:39
Acenaphthene	0.846	0.0481	0.0144	ug/L	1		10/07/19 21:20
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		10/07/19 21:20
Benzo[b]Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		10/07/19 21:20
Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Fluorene	2.18	0.0481	0.0144	ug/L	1		10/07/19 21:20
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Naphthalene	43.7	0.962	0.298	ug/L	10		10/08/19 19:39
Phenanthrene	1.24	0.0481	0.0144	ug/L	1		10/07/19 21:20
Pyrene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/19 21:20
Surrogates							
2-Methylnaphthalene-d10 (surr)	53.7	47-106		%	1		10/07/19 21:20
Fluoranthene-d10 (surr)	46.4	24-116		%	1		10/07/19 21:20

Batch Information

Analytical Batch: XMS11781
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/08/19 19:39
 Container ID: 1199795002-C

Prep Batch: XXX42332
 Prep Method: SW3520C
 Prep Date/Time: 09/25/19 07:14
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS11778
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/07/19 21:20
 Container ID: 1199795002-C

Prep Batch: XXX42332
 Prep Method: SW3520C
 Prep Date/Time: 09/25/19 07:14
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of MW-3

Client Sample ID: **MW-3**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795002
 Lab Project ID: 1199795

Collection Date: 09/19/19 20:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	12.1		0.577	0.173	mg/L	1		10/08/19 00:01
Surrogates								
5a Androstane (surr)	74.5		50-150		%	1		10/08/19 00:01

Batch Information

Analytical Batch: XFC15377
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/08/19 00:01
 Container ID: 1199795002-A

Prep Batch: XXX42382
 Prep Method: SW3520C
 Prep Date/Time: 10/02/19 08:49
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of MW-3

Client Sample ID: **MW-3**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795002
 Lab Project ID: 1199795

Collection Date: 09/19/19 20:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		09/30/19 16:03
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,2,4-Trimethylbenzene	145	1.00	0.310	ug/L	1		09/30/19 16:03
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/30/19 16:03
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,3,5-Trimethylbenzene	62.6	1.00	0.310	ug/L	1		09/30/19 16:03
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
2-Butanone (MEK)	10.5	10.0	3.10	ug/L	1		09/30/19 16:03
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
4-Isopropyltoluene	7.24	1.00	0.310	ug/L	1		09/30/19 16:03
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
Benzene	0.340 J	0.400	0.120	ug/L	1		09/30/19 16:03
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
Bromoform	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Bromomethane	2.50 U	5.00	1.50	ug/L	1		09/30/19 16:03
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
Chloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03

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Results of MW-3

Client Sample ID: **MW-3**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795002
 Lab Project ID: 1199795

Collection Date: 09/19/19 20:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Chloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:03
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Ethylbenzene	20.0	1.00	0.310	ug/L	1		09/30/19 16:03
Freon-113	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Isopropylbenzene (Cumene)	7.24	1.00	0.310	ug/L	1		09/30/19 16:03
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		09/30/19 16:03
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
Naphthalene	99.0	1.00	0.310	ug/L	1		09/30/19 16:03
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
n-Propylbenzene	13.3	1.00	0.310	ug/L	1		09/30/19 16:03
o-Xylene	30.2	1.00	0.310	ug/L	1		09/30/19 16:03
P & M -Xylene	58.3	2.00	0.620	ug/L	1		09/30/19 16:03
sec-Butylbenzene	3.61	1.00	0.310	ug/L	1		09/30/19 16:03
Styrene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Toluene	0.310 J	1.00	0.310	ug/L	1		09/30/19 16:03
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:03
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:03
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		09/30/19 16:03
Xylenes (total)	88.5	3.00	1.00	ug/L	1		09/30/19 16:03
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/30/19 16:03
4-Bromofluorobenzene (surr)	110	85-114		%	1		09/30/19 16:03
Toluene-d8 (surr)	101	89-112		%	1		09/30/19 16:03

Results of MW-3

Client Sample ID: **MW-3**
Client Project ID: **104.00774.19001 - Foodland**
Lab Sample ID: 1199795002
Lab Project ID: 1199795

Collection Date: 09/19/19 20:00
Received Date: 09/24/19 10:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19508
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/30/19 16:03
Container ID: 1199795002-E

Prep Batch: VXX34986
Prep Method: SW5030B
Prep Date/Time: 09/30/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-4

Client Sample ID: **MW-4**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795003
 Lab Project ID: 1199795

Collection Date: 09/19/19 21:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	42.0		0.481	0.144	ug/L	10		10/08/19 19:59
2-Methylnaphthalene	35.5		0.481	0.144	ug/L	10		10/08/19 19:59
Acenaphthene	0.703		0.0481	0.0144	ug/L	1		10/07/19 21:40
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		10/07/19 21:40
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		10/07/19 21:40
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Fluorene	1.77		0.0481	0.0144	ug/L	1		10/07/19 21:40
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Naphthalene	36.4		0.962	0.298	ug/L	10		10/08/19 19:59
Phenanthrene	0.980		0.0481	0.0144	ug/L	1		10/07/19 21:40
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		10/07/19 21:40
Surrogates								
2-Methylnaphthalene-d10 (surr)	44	*	47-106		%	1		10/07/19 21:40
Fluoranthene-d10 (surr)	40.7		24-116		%	1		10/07/19 21:40

Batch Information

Analytical Batch: XMS11781
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/08/19 19:59
 Container ID: 1199795003-C

Prep Batch: XXX42332
 Prep Method: SW3520C
 Prep Date/Time: 09/25/19 07:14
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS11778
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/07/19 21:40
 Container ID: 1199795003-C

Prep Batch: XXX42332
 Prep Method: SW3520C
 Prep Date/Time: 09/25/19 07:14
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of MW-4

Client Sample ID: **MW-4**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795003
 Lab Project ID: 1199795

Collection Date: 09/19/19 21:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	18.5		0.577	0.173	mg/L	1		10/08/19 00:11
Surrogates								
5a Androstane (surr)	83.9		50-150		%	1		10/08/19 00:11

Batch Information

Analytical Batch: XFC15377
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 10/08/19 00:11
 Container ID: 1199795003-A

Prep Batch: XXX42382
 Prep Method: SW3520C
 Prep Date/Time: 10/02/19 08:49
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of MW-4

Client Sample ID: **MW-4**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795003
 Lab Project ID: 1199795

Collection Date: 09/19/19 21:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		09/30/19 16:17
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,2,4-Trimethylbenzene	155	1.00	0.310	ug/L	1		09/30/19 16:17
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/30/19 16:17
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,3,5-Trimethylbenzene	67.6	1.00	0.310	ug/L	1		09/30/19 16:17
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
2-Butanone (MEK)	12.1	10.0	3.10	ug/L	1		09/30/19 16:17
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
4-Isopropyltoluene	7.75	1.00	0.310	ug/L	1		09/30/19 16:17
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
Benzene	0.360 J	0.400	0.120	ug/L	1		09/30/19 16:17
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
Bromoform	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Bromomethane	2.50 U	5.00	1.50	ug/L	1		09/30/19 16:17
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
Chloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17

Print Date: 10/17/2019 11:25:14AM

J flagging is activated

Results of MW-4

Client Sample ID: **MW-4**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795003
 Lab Project ID: 1199795

Collection Date: 09/19/19 21:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Chloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 16:17
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Ethylbenzene	21.2	1.00	0.310	ug/L	1		09/30/19 16:17
Freon-113	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Isopropylbenzene (Cumene)	7.70	1.00	0.310	ug/L	1		09/30/19 16:17
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		09/30/19 16:17
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
Naphthalene	109	1.00	0.310	ug/L	1		09/30/19 16:17
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
n-Propylbenzene	14.5	1.00	0.310	ug/L	1		09/30/19 16:17
o-Xylene	32.4	1.00	0.310	ug/L	1		09/30/19 16:17
P & M -Xylene	62.2	2.00	0.620	ug/L	1		09/30/19 16:17
sec-Butylbenzene	3.95	1.00	0.310	ug/L	1		09/30/19 16:17
Styrene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Toluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 16:17
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		09/30/19 16:17
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		09/30/19 16:17
Xylenes (total)	94.7	3.00	1.00	ug/L	1		09/30/19 16:17
Surrogates							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		09/30/19 16:17
4-Bromofluorobenzene (surr)	111	85-114		%	1		09/30/19 16:17
Toluene-d8 (surr)	101	89-112		%	1		09/30/19 16:17

Results of MW-4

Client Sample ID: **MW-4**
Client Project ID: **104.00774.19001 - Foodland**
Lab Sample ID: 1199795003
Lab Project ID: 1199795

Collection Date: 09/19/19 21:00
Received Date: 09/24/19 10:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19508
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/30/19 16:17
Container ID: 1199795003-E

Prep Batch: VXX34986
Prep Method: SW5030B
Prep Date/Time: 09/30/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795004
 Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/30/19 12:52
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		09/30/19 12:52
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
Benzene	0.200 U	0.400	0.120	ug/L	1		09/30/19 12:52
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
Bromoform	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Bromomethane	2.50 U	5.00	1.50	ug/L	1		09/30/19 12:52
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
Chloroethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52

Print Date: 10/17/2019 11:25:14AM

J flagging is activated

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **104.00774.19001 - Foodland**
 Lab Sample ID: 1199795004
 Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
 Received Date: 09/24/19 10:21
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Chloromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		09/30/19 12:52
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Freon-113	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		09/30/19 12:52
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
Naphthalene	0.500 U	1.00	0.310	ug/L	1		10/02/19 14:21
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/30/19 12:52
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Styrene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Toluene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		09/30/19 12:52
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		09/30/19 12:52
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		09/30/19 12:52
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/30/19 12:52
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		09/30/19 12:52
4-Bromofluorobenzene (surr)	101	85-114		%	1		09/30/19 12:52
Toluene-d8 (surr)	100	89-112		%	1		09/30/19 12:52

Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **104.00774.19001 - Foodland**
Lab Sample ID: 1199795004
Lab Project ID: 1199795

Collection Date: 09/19/19 19:00
Received Date: 09/24/19 10:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19508
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/30/19 12:52
Container ID: 1199795004-A

Prep Batch: VXX34986
Prep Method: SW5030B
Prep Date/Time: 09/30/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19518
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/02/19 14:21
Container ID: 1199795004-B

Prep Batch: VXX34998
Prep Method: SW5030B
Prep Date/Time: 10/02/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1800230 [VXX/34986]
 Blank Lab ID: 1535557

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199795001, 1199795002, 1199795003, 1199795004

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 10/17/2019 11:25:15AM

Method Blank

Blank ID: MB for HBN 1800230 [VXX/34986]
 Blank Lab ID: 1535557

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199795001, 1199795002, 1199795003, 1199795004

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	98.6	89-112		%

Method Blank

Blank ID: MB for HBN 1800230 [VXX/34986]
 Blank Lab ID: 1535557

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199795001, 1199795002, 1199795003, 1199795004

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS19508
 Analytical Method: SW8260C
 Instrument: VPA 780/5975 GC/MS
 Analyst: CMC
 Analytical Date/Time: 9/30/2019 10:48:00AM

Prep Batch: VXX34986
 Prep Method: SW5030B
 Prep Date/Time: 9/30/2019 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/17/2019 11:25:15AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199795 [VXX34986]
 Blank Spike Lab ID: 1535558
 Date Analyzed: 09/30/2019 11:03

Spike Duplicate ID: LCSD for HBN 1199795 [VXX34986]
 Spike Duplicate Lab ID: 1535559
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199795001, 1199795002, 1199795003, 1199795004

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	34.8	116	30	33.1	110	(78-124)	5.20	(< 20)
1,1,1-Trichloroethane	30	33.9	113	30	32.3	108	(74-131)	4.90	(< 20)
1,1,2,2-Tetrachloroethane	30	31.6	105	30	30.8	103	(71-121)	2.50	(< 20)
1,1,2-Trichloroethane	30	32.2	107	30	31.3	104	(80-119)	2.80	(< 20)
1,1-Dichloroethane	30	32.5	108	30	31.3	104	(77-125)	3.80	(< 20)
1,1-Dichloroethene	30	33.1	110	30	31.6	105	(71-131)	4.60	(< 20)
1,1-Dichloropropene	30	33.9	113	30	32.3	108	(79-125)	5.00	(< 20)
1,2,3-Trichlorobenzene	30	32.1	107	30	32.4	108	(69-129)	1.10	(< 20)
1,2,3-Trichloropropane	30	32.0	107	30	31.6	105	(73-122)	1.30	(< 20)
1,2,4-Trichlorobenzene	30	33.0	110	30	33.0	110	(69-130)	0.12	(< 20)
1,2,4-Trimethylbenzene	30	33.5	112	30	32.5	108	(79-124)	3.00	(< 20)
1,2-Dibromo-3-chloropropane	30	32.2	107	30	32.7	109	(62-128)	1.70	(< 20)
1,2-Dibromoethane	30	33.8	113	30	33.0	110	(77-121)	2.20	(< 20)
1,2-Dichlorobenzene	30	31.9	106	30	31.4	105	(80-119)	1.60	(< 20)
1,2-Dichloroethane	30	30.9	103	30	30.1	100	(73-128)	2.70	(< 20)
1,2-Dichloropropane	30	31.9	106	30	32.3	108	(78-122)	1.00	(< 20)
1,3,5-Trimethylbenzene	30	33.5	112	30	32.3	108	(75-124)	3.60	(< 20)
1,3-Dichlorobenzene	30	32.6	109	30	31.8	106	(80-119)	2.60	(< 20)
1,3-Dichloropropane	30	32.5	108	30	32.0	107	(80-119)	1.60	(< 20)
1,4-Dichlorobenzene	30	32.2	107	30	32.0	107	(79-118)	0.65	(< 20)
2,2-Dichloropropane	30	33.1	110	30	32.0	107	(60-139)	3.40	(< 20)
2-Butanone (MEK)	90	95.2	106	90	99.0	110	(56-143)	3.90	(< 20)
2-Chlorotoluene	30	32.6	109	30	31.4	105	(79-122)	3.50	(< 20)
2-Hexanone	90	91.8	102	90	92.8	103	(57-139)	1.00	(< 20)
4-Chlorotoluene	30	33.1	110	30	31.2	104	(78-122)	5.90	(< 20)
4-Isopropyltoluene	30	34.4	115	30	32.8	109	(77-127)	4.80	(< 20)
4-Methyl-2-pentanone (MIBK)	90	100	111	90	98.8	110	(67-130)	1.30	(< 20)
Benzene	30	32.7	109	30	31.3	104	(79-120)	4.30	(< 20)
Bromobenzene	30	32.3	108	30	31.4	105	(80-120)	3.00	(< 20)
Bromochloromethane	30	31.5	105	30	30.8	103	(78-123)	2.00	(< 20)
Bromodichloromethane	30	34.3	114	30	33.2	111	(79-125)	3.30	(< 20)
Bromoform	30	34.6	115	30	33.6	112	(66-130)	2.90	(< 20)
Bromomethane	30	44.5	148	* 30	38.2	127	(53-141)	15.20	(< 20)
Carbon disulfide	45	47.5	105	45	45.2	100	(64-133)	5.00	(< 20)

Print Date: 10/17/2019 11:25:18AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199795 [VXX34986]
 Blank Spike Lab ID: 1535558
 Date Analyzed: 09/30/2019 11:03

Spike Duplicate ID: LCSD for HBN 1199795 [VXX34986]
 Spike Duplicate Lab ID: 1535559
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199795001, 1199795002, 1199795003, 1199795004

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	34.6	115	30	32.7	109	(72-136)	5.60	(< 20)
Chlorobenzene	30	31.7	106	30	30.7	102	(82-118)	3.10	(< 20)
Chloroethane	30	37.1	124	30	30.4	101	(60-138)	19.90	(< 20)
Chloroform	30	32.6	109	30	31.3	104	(79-124)	3.90	(< 20)
Chloromethane	30	32.0	107	30	30.8	103	(50-139)	3.70	(< 20)
cis-1,2-Dichloroethene	30	31.9	106	30	31.4	105	(78-123)	1.70	(< 20)
cis-1,3-Dichloropropene	30	33.9	113	30	33.0	110	(75-124)	2.70	(< 20)
Dibromochloromethane	30	33.8	113	30	33.0	110	(74-126)	2.30	(< 20)
Dibromomethane	30	31.8	106	30	31.1	104	(79-123)	2.20	(< 20)
Dichlorodifluoromethane	30	32.0	107	30	29.8	100	(32-152)	6.90	(< 20)
Ethylbenzene	30	33.1	110	30	32.0	107	(79-121)	3.30	(< 20)
Freon-113	45	49.2	109	45	47.0	104	(70-136)	4.70	(< 20)
Hexachlorobutadiene	30	35.0	117	30	34.5	115	(66-134)	1.50	(< 20)
Isopropylbenzene (Cumene)	30	32.9	110	30	31.5	105	(72-131)	4.30	(< 20)
Methylene chloride	30	31.3	104	30	30.9	103	(74-124)	1.40	(< 20)
Methyl-t-butyl ether	45	48.2	107	45	47.9	106	(71-124)	0.67	(< 20)
Naphthalene	30	27.9	93	30	29.8	99	(61-128)	6.50	(< 20)
n-Butylbenzene	30	31.8	106	30	30.8	103	(75-128)	3.30	(< 20)
n-Propylbenzene	30	33.3	111	30	31.8	106	(76-126)	4.70	(< 20)
o-Xylene	30	32.3	108	30	31.0	103	(78-122)	4.10	(< 20)
P & M -Xylene	60	66.1	110	60	63.9	106	(80-121)	3.40	(< 20)
sec-Butylbenzene	30	33.3	111	30	32.6	109	(77-126)	2.20	(< 20)
Styrene	30	32.9	110	30	32.2	107	(78-123)	2.20	(< 20)
tert-Butylbenzene	30	33.7	112	30	31.9	106	(78-124)	5.40	(< 20)
Tetrachloroethene	30	33.6	112	30	32.0	107	(74-129)	4.80	(< 20)
Toluene	30	32.2	107	30	30.7	102	(80-121)	4.70	(< 20)
trans-1,2-Dichloroethene	30	32.4	108	30	31.0	103	(75-124)	4.20	(< 20)
trans-1,3-Dichloropropene	30	30.9	103	30	30.5	102	(73-127)	1.50	(< 20)
Trichloroethene	30	33.5	112	30	31.9	106	(79-123)	4.70	(< 20)
Trichlorofluoromethane	30	35.2	117	30	30.8	103	(65-141)	13.30	(< 20)
Vinyl acetate	30	31.7	106	30	31.1	104	(54-146)	1.90	(< 20)
Vinyl chloride	30	32.4	108	30	30.1	100	(58-137)	7.30	(< 20)
Xylenes (total)	90	98.4	109	90	94.9	105	(79-121)	3.60	(< 20)

Print Date: 10/17/2019 11:25:18AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199795 [VXX34986]
 Blank Spike Lab ID: 1535558
 Date Analyzed: 09/30/2019 11:03

Spike Duplicate ID: LCSD for HBN 1199795 [VXX34986]
 Spike Duplicate Lab ID: 1535559
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199795001, 1199795002, 1199795003, 1199795004

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	99.1	99	30	98.4	98	(81-118)	0.64	
4-Bromofluorobenzene (surr)	30	99.2	99	30	98.7	99	(85-114)	0.57	
Toluene-d8 (surr)	30	101	101	30	102	102	(89-112)	0.20	

Batch Information

Analytical Batch: **VMS19508**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **CMC**

Prep Batch: **VXX34986**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/30/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/17/2019 11:25:18AM

Method Blank

Blank ID: MB for HBN 1800341 [VXX/34998]
 Blank Lab ID: 1535986

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199795004

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Naphthalene	0.500U	1.00	0.310	ug/L
Sf uor ateg				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	99.4	89-112		%

Batch Information

Analytical Batch: VMS19518
 Analytical Method: SW8260C
 Instrument: Agilent 7890-75MS
 Analyst: CMC
 Analytical Date/Time: 10/2/2019 10:34:00AM

Prep Batch: VXX34998
 Prep Method: SW5030B
 Prep Date/Time: 10/2/2019 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/17/2019 11:25:21AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199795 [VXX34998]
 Blank Spike Lab ID: 1535987
 Date Analyzed: 10/02/2019 11:05

Spike Duplicate ID: LCSD for HBN 1199795 [VXX34998]
 Spike Duplicate Lab ID: 1535988
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199795004

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Naphthalene	30	28.6	95	30	24.2	81	(61-128)	16.50	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	95.7	96	30	97	97	(81-118)	1.40	
4-Bromofluorobenzene (surr)	30	105	105	30	104	104	(85-114)	0.73	
Toluene-d8 (surr)	30	98.7	99	30	101	101	(89-112)	1.90	

Batch Information

Analytical Batch: **VMS19518**
 Analytical Method: **SW8260C**
 Instrument: **Agilent 7890-75MS**
 Analyst: **CMC**

Prep Batch: **VXX34998**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/02/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/17/2019 11:25:22AM

Method Blank

Blank ID: MB for HBN 1799947 [XXX/42332]
 Blank Lab ID: 1534130

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199795002, 1199795003

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	69.8	47-106		%
Fluoranthene-d10 (surr)	77.7	24-116		%

Batch Information

Analytical Batch: XMS11778
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 10/7/2019 6:16:00PM

Prep Batch: XXX42332
 Prep Method: SW3520C
 Prep Date/Time: 9/25/2019 7:14:31AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 10/17/2019 11:25:25AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199795 [XXX42332]
 Blank Spike Lab ID: 1534131
 Date Analyzed: 10/07/2019 18:36

Spike Duplicate ID: LCSD for HBN 1199795 [XXX42332]
 Spike Duplicate Lab ID: 1534132
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199795002, 1199795003

Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.02	51	2	1.40	70	(41-115)	30.90	* (< 20)
2-Methylnaphthalene	2	0.997	50	2	1.38	69	(39-114)	32.20	* (< 20)
Acenaphthene	2	1.03	51	2	1.43	71	(48-114)	32.40	* (< 20)
Acenaphthylene	2	1.09	55	2	1.49	74	(35-121)	30.80	* (< 20)
Anthracene	2	1.13	56	2	1.52	76	(53-119)	29.60	* (< 20)
Benzo(a)Anthracene	2	1.13	57	* 2	1.48	74	(59-120)	26.80	* (< 20)
Benzo[a]pyrene	2	0.985	49	* 2	1.29	64	(53-120)	26.60	* (< 20)
Benzo[b]Fluoranthene	2	1.13	57	2	1.54	77	(53-126)	30.30	* (< 20)
Benzo[g,h,i]perylene	2	0.790	40	* 2	1.12	56	(44-128)	34.50	* (< 20)
Benzo[k]fluoranthene	2	1.01	51	* 2	1.36	68	(54-125)	29.20	* (< 20)
Chrysene	2	1.06	53	* 2	1.39	69	(57-120)	27.00	* (< 20)
Dibenzo[a,h]anthracene	2	0.655	33	* 2	0.918	46	(44-131)	33.50	* (< 20)
Fluoranthene	2	1.21	60	2	1.57	79	(58-120)	26.20	* (< 20)
Fluorene	2	1.08	54	2	1.51	76	(50-118)	33.00	* (< 20)
Indeno[1,2,3-c,d] pyrene	2	0.890	45	* 2	1.22	61	(48-130)	31.10	* (< 20)
Naphthalene	2	0.957	48	2	1.35	67	(43-114)	33.90	* (< 20)
Phenanthrene	2	1.09	55	2	1.46	73	(53-115)	28.90	* (< 20)
Pyrene	2	1.26	63	2	1.63	82	(53-121)	25.90	* (< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	51.2	51	2	67.6	68	(47-106)	27.60	
Fluoranthene-d10 (surr)	2	62.1	62	2	80.1	80	(24-116)	25.30	

Batch Information

Analytical Batch: XMS11778
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD

Prep Batch: XXX42332
 Prep Method: SW3520C
 Prep Date/Time: 09/25/2019 07:14
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/17/2019 11:25:26AM

Method Blank

Blank ID: MB for HBN 1800266 [XXX/42382]
 Blank Lab ID: 1535685

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199795001, 1199795002, 1199795003

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	81.5	60-120		%

Batch Information

Analytical Batch: XFC15377
 Analytical Method: AK102
 Instrument: Agilent 7890B R
 Analyst: CMS
 Analytical Date/Time: 10/7/2019 7:01:00PM

Prep Batch: XXX42382
 Prep Method: SW3520C
 Prep Date/Time: 10/2/2019 8:49:46AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 10/17/2019 11:25:29AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199795 [XXX42382]
 Blank Spike Lab ID: 1535686
 Date Analyzed: 10/07/2019 19:31

Spike Duplicate ID: LCSD for HBN 1199795 [XXX42382]
 Spike Duplicate Lab ID: 1535687
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199795001, 1199795002, 1199795003

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.1	91	20	18.1	91	(75-125)	0.17	(< 20)
Surrogates									
5a Androstane (surr)	0.4	93.1	93	0.4	93.2	93	(60-120)	0.08	

Batch Information

Analytical Batch: **XFC15377**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **CMS**

Prep Batch: **XXX42382**
 Prep Method: **SW3520C**
 Prep Date/Time: **10/02/2019 08:49**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 10/17/2019 11:25:31AM



SGS CHAIN O

1199795



Revised Report - Revision 1

www.us.sgs.com

CLIENT: SLR

CONTACT: Carl Benson
PHONE #: 907-452-2252

PROJECT NAME: Foodland
PROJECT/PWSID/PERMIT#: 104.00774.19001

REPORTS TO: Carl Benson
E-MAIL: cbenson@slrconsulting.com
Profile #: 36261477

INVOICE TO: SLR
QUOTE #: P.O. #:

Section 1

Section 2

Section 3

Section 4

Section 5

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 1

Preservative

Analysis*

NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS

REMARKS/LOC ID

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX CODE	Comp	Grab	MI (Multi-incre-mental)	DR0	AK102	VCS	SW8260c	PAH	SW8270D-SIM	REMARKS/LOC ID
	1A-E MW-34A	9/19/19	1900	GW	G			X	X	X				
	2A-G MW-3		2000	GW	G			X	X	X				
	3A-G MW-4		2100	GW	G			X	X	X				
	4A-C													

CONTAINERS

Temp Blank °C: 0.3
or Ambient []

Chain of Custody Seal: (Circle) INTACT
BROKEN ABSENT

Delivery Method: Hand Delivery [] Commercial Delivery []

Requested Turnaround Time and/or Special Instructions: Standard

Relinquished By: (1) [Signature]
Date: 9-20-19 10:30
Received By: [Signature]

Relinquished By: (2) [Signature]
Date: 9-23-19 1400
Received By: [Signature]

Relinquished By: (3) [Signature]
Date: 9-24-19
Received By: [Signature]

Relinquished By: (4) [Signature]
Date: 9-24-19 10:21
Received For Laboratory By: [Signature]

ANC: IF, 1B 1: 2.8 D61
2: 4.6 D44

http://www.sgs.com/terms-and-conditions

F089-Blank_COC_20181228

37 of 40



SGS Workorder #:

1199795



1 1 9 9 7 9 5

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			N/A	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1 front 1 back		
COC accompanied samples?	Yes			
DOD: Were samples received in COC corresponding coolers?	N/A			
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1	@ 2.8 °C Therm. ID: D61
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Yes	Cooler ID: 2	@ 4.6 °C Therm. ID: D44
			Cooler ID:	@ °C Therm. ID:
			Cooler ID:	@ °C Therm. ID:
			Cooler ID:	@ °C Therm. ID:
*if >6°C, were samples collected <8 hours ago?		N/A		
If <0°C, were sample containers ice free?		N/A		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes			
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes			
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes			
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A	***Exemption permitted for metals (e.g,200.8/6020A).	
Volatile / LL-Hg Requirements				
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes			
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes			
Were all soil VOAs field extracted with MeOH+BFB?	N/A			
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				



SGS Workorder #:

1199795

1199795

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Exemption permitted if sampler hand carries/delivers.	
Were Custody Seals intact? Note # & location	<input checked="" type="checkbox"/>	Yes		
COC accompanied samples?	<input checked="" type="checkbox"/>	Yes		
DOD: Were samples received in COC corresponding coolers?	<input type="checkbox"/>	N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/>	Yes	Cooler ID: 1	@ 0.3 °C Therm. ID: D23
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.	<input type="checkbox"/>		Cooler ID:	@ °C Therm. ID:
	<input type="checkbox"/>		Cooler ID:	@ °C Therm. ID:
	<input type="checkbox"/>		Cooler ID:	@ °C Therm. ID:
	<input type="checkbox"/>		Cooler ID:	@ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/>			
If <0°C, were sample containers ice free?	<input type="checkbox"/>			
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input type="checkbox"/>	N/C		
Note: If times differ <1hr, record details & login per COC. *Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?	<input checked="" type="checkbox"/>	Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	<input checked="" type="checkbox"/>	Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/>	N/C		
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/>	N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?	<input checked="" type="checkbox"/>	Yes	PAHs break hold: 9/26/19	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #			0	

Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1199795001-A	HCL to pH < 2	OK			
1199795001-B	HCL to pH < 2	OK			
1199795001-C	HCL to pH < 2	OK			
1199795001-D	HCL to pH < 2	OK			
1199795001-E	HCL to pH < 2	OK			
1199795002-A	HCL to pH < 2	OK			
1199795002-B	HCL to pH < 2	OK			
1199795002-C	No Preservative Required	OK			
1199795002-D	No Preservative Required	OK			
1199795002-E	HCL to pH < 2	OK			
1199795002-F	HCL to pH < 2	OK			
1199795002-G	HCL to pH < 2	OK			
1199795003-A	HCL to pH < 2	OK			
1199795003-B	HCL to pH < 2	OK			
1199795003-C	No Preservative Required	OK			
1199795003-D	No Preservative Required	OK			
1199795003-E	HCL to pH < 2	OK			
1199795003-F	HCL to pH < 2	OK			
1199795003-G	HCL to pH < 2	OK			
1199795004-A	HCL to pH < 2	OK			
1199795004-B	HCL to pH < 2	OK			
1199795004-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.